

Trend Study 25C-13-98

Study site name: Short Neck.

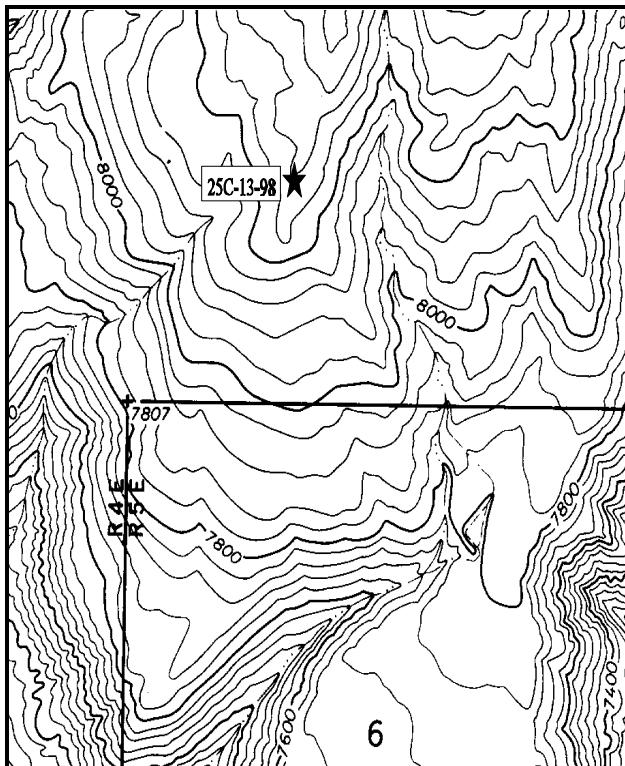
Range type: Burn-Mixed Mountain Brush.

Compass bearing: frequency baseline 180 degrees.

Footmark (first frame at) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line4 (71ft).

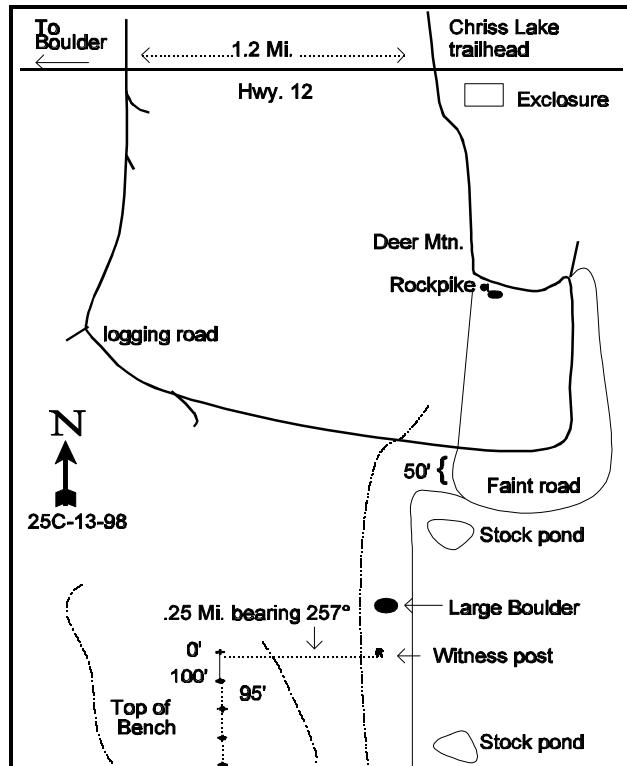
LOCATION DESCRIPTION

Go south (toward Boulder) from the Chris Lake trailhead (same place to turnoff to Deer Mountain) on SR 12 for 1.2 miles. Turn south onto a logging road. Proceed on main road 0.1 mile. Stay right. Go 0.1 mile to a fork, stay right. From here, stay on main road at all forks. Proceed 0.2 miles to a gate. Continue 0.15 miles to a fork, stay left. Go 0.4 miles to another fork, stay left. Proceed 0.85 miles and stay left. Continue 0.15 miles to a stock pond. Assuming you can drive to this stock pond, you will undoubtedly have to walk from here. Find an old faint road that goes down the ravine just west of the stock pond. Hike down this road one-half mile or so to a place where the plastic water pipeline makes a fork and is marked by an orange steel fencepost. Go west from here to the ridge top on the west side of the ravine. Then hike down the ridge about one-quarter of a mile to the study site. The 0-foot baseline stake is by a boulder that is about 3 feet high by 4 feet wide. It is marked by browse tag #7171. There is a 95 foot separation between the 100-foot baseline stake and the 200-foot baseline stake.



Map Name: Boulder Town

Township 32S, Range 5E, Section Unsurveyed



Diagrammatic Sketch

UTM 4203287.564 N, 464963.484 E

DISCUSSION

Trend Study No. 25C-13 (44-13)

The Short Neck trend study is located in an area burned by wildfire in 1971. It is now occupied by a mixed mountain brush community. The study site is located at 8,000 feet on the southeast aspect of a bench below Deer Mountain and 400 feet above Short Neck Mesa. The transect runs south across the slope, which varies from nearly level at the baseline to 10% at the last post. The area is considered winter range which is heavily used by elk, and to a lesser extent deer. Pellet group data taken on the site in 1998 estimate 52 elk, 14 deer, and 8 cow days use/acre. Cattle pats appear to be from last year. Some elk sign appeared to be only a few weeks old while the rest looked to be from last winter.

Soil on the site is a cobbly, sandy loam with a moderately acid pH (5.7). Large rocks and boulders are commonly found on the surface and throughout the soil profile. Soil depth is variable with an estimated effective rooting depth (see methods) of almost 10 inches. There is little if any erosion occurring. The rocky nature of the soil is demonstrated by the high percentage of rock and pavement cover at 37% in 1994 and 30% in 1998. Little bare soil is left exposed, currently ('98) only 1%.

The key browse species would be Gambel oak, serviceberry, and bitterbrush. These three species contributed 97% of the total browse cover in 1994 and 95% in 1998. Gambel oak alone currently ('98) makes up 62% of the browse cover. Density has varied over the years from 3,866 stems/acre in 1987 to 7,160 by 1998. Oak sampled in 1987 had not been hedged, but 25% showed a loss of vigor due to insect damage. Other clumps not sampled did show signs of browsing. The oak was not as prevalent on the original frequency baseline as opposed to the density plots used in 1987 and 1991. Oak densities increased 38% between 1987 and 1991 and appeared to be light to moderately utilized. In 1994, density of oak was estimated with the new, larger sample size at 4,000 stems/acre. Most plants were moderately hedged and in good vigor. Density increased by 1998, but this is primarily due to the increase in young plants (400 to 2,560 plants/acre). Most plants appeared only lightly utilized.

Thick patches of serviceberry were also sampled on the site. These clumps, as with the oak, are a mixture of both mature and young plants. Population density has remained relatively stable since 1987 at around 1,500 plants/acre. The serviceberry were heavily hedged in 1987, however, vigor was excellent. Use in 1991 was mostly moderate, but light to moderate in 1994 and 1998. Reproduction is limited, although the population appears healthy with a percent decadency of only 6%. Another preferred browse is bitterbrush which appears to have a stable population of 660 plants/acre as of 1998. Utilization has been moderate since 1987, with heavier use reported in 1991. Current use is more light to moderate. Vigor is good and percent decadence is low. Several other shrub species are found on the site in small numbers.

Herbaceous vegetation is limited by the thick shrub canopy which made up 67% of the total vegetative cover in 1994 and 58% by 1998. The large amount of rock cover also limits herbaceous plants to some extent. An exception is the extremely abundant herbaceous Louisiana sage. This rhizomatous plant currently ('98) provides 52% of the forb cover. Other common species encountered were: redroot eriogonum, penstemon, bastard toadflax, and longleaf phlox. Grasses are diverse with 6 species providing most of the cover. These include: blue grama, smooth brome, cheatgrass, a Carex, bottlebrush squirreltail, and needle-and-thread grass. Crested wheatgrass is found in small numbers while the intermediate wheatgrass found on the site in 1991, was not encountered in 1994 or 1998.

1991 TREND ASSESSMENT

Two of the more critical parameters for basic cover, percent bare ground and vegetative basal cover, were stable or slightly improving in 1987. However, litter cover decreased from 42% to 35%, and rock cover (rock and pavement) increased from 49% to 53%. The overall trend for soil is stable. Looking at the three key

browse species, Gambel oak, serviceberry, and antelope bitterbrush; serviceberry decreased in number by 19%, while oak and bitterbrush increased by 38% and 50% respectively. Serviceberry in 1987 made up 33% of the key browse population and in 1991 it only made up 19%. Overall, the trend for key browse would be slightly up. Looking at the grasses and forbs, sum of nested frequency is similar between 1987 and 1991 indicating a stable trend.

TREND ASSESSMENT

soil - stable

browse - slightly upward

herbaceous understory - stable

1994 TREND ASSESSMENT

Basic ground cover characteristics are similar to those of 1991 and erosion is not a problem at this time. Trend for soil is stable. The browse trend is slightly up for the moment due to healthy populations, low decadency rates, and improved vigor of the key species since 1991. Some of the population density changes are the result of the larger sample taken in 1994. On the down side, there were few seedling and young plants of the key species encountered. This will likely change with better precipitation patterns. Trend for the herbaceous understory is down dramatically. Sum of nested frequency of perennial grasses and herbs has declined from 992 to only 682 between 1991 and 1994, a 31% decrease. This change is likely the result of the dry spring periods of 1993 and 1994. Combined precipitation data from Boulder and Escalante taken from April through July indicate that these areas received only 51% of their normal precipitation in 1993 and 45% in 1994. Lack of adequate precipitation during these months severely limit's growth of herbaceous vegetation, especially forbs. A return to normal precipitation patterns will reverse this trend.

TREND ASSESSMENT

soil - stable

browse - slightly up

herbaceous understory - down due to drought

1998 TREND ASSESSMENT

Trend for soil is up due to an increase in vegetation and litter cover and a decline in rock and bare ground cover. Trend for the key browse species, serviceberry, bitterbrush, and Gambel oak is slightly up due to improved recruitment compared to 1994. Densities are similar and vigor remains good with low decadence. Trend for the herbaceous understory is up. Sum of nested frequency of perennial grasses increased slightly with a significant increase in frequency of bottlebrush squirreltail. Unfortunately, cheatgrass also showed a significant increase in nested frequency, more than doubling from 44 to 99. Cover also increased from .21% cover to 2.13% cover. Sum of nested frequency of forbs remained similar to 1994 estimates. Production of grasses has increased with cover rising from 8% in 1994 to 14% by 1998. Production of forbs has remained similar at 8%.

TREND ASSESSMENT

soil - up

browse - up slightly

herbaceous understory - up slightly for grasses, stable for forbs

HERBACEOUS TRENDS --

Herd unit 25C, Study no: 13

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'87	'91	'94	'98	'87	'91	'94	'98	'94	'98
G	<i>Agropyron cristatum</i>	5	5	10	8	2	2	4	5	.19	.10
G	<i>Agropyron intermedium</i>	b13	b11	a-	a-	6	5	-	-	-	.01
G	<i>Bouteloua gracilis</i>	ab61	b87	a52	a44	25	34	22	18	1.44	2.10
G	<i>Bromus inermis</i>	a22	a21	b41	b50	7	7	16	19	1.94	2.13
G	<i>Bromus tectorum</i> (a)	-	-	a44	b99	-	-	17	33	.21	1.58
G	<i>Carex</i> spp.	33	36	46	37	14	14	20	16	1.78	1.64
G	<i>Poa fendleriana</i>	7	23	19	16	5	10	10	7	.18	.26
G	<i>Sitanion hystrix</i>	b120	b101	a63	b122	51	51	30	53	.44	1.89
G	<i>Stipa comata</i>	b183	b154	a75	a96	65	59	26	34	1.62	4.06
Total Annual Grasses		0	0	44	99	0	0	17	33	0.21	1.58
Total Perennial Grasses		444	438	306	373	175	182	128	152	7.61	12.21
F	<i>Alyssum alyssoides</i> (a)	-	-	-	3	-	-	-	1	-	.00
F	<i>Allium cernuum</i>	8	6	3	3	4	4	1	2	.03	.03
F	<i>Arabis</i> spp.	-	4	6	-	-	3	4	-	.02	-
F	<i>Artemisia ludoviciana</i>	b221	a192	a149	a149	80	78	59	58	3.98	4.15
F	<i>Astragalus desperatus</i>	3	6	-	-	2	2	-	-	-	-
F	<i>Aster</i> spp.	-	-	-	3	-	-	-	1	-	.03
F	<i>Astragalus</i> spp.	-	1	-	4	-	1	-	2	-	.04
F	<i>Chaenactis douglasii</i>	-	1	3	5	-	1	1	2	.15	.18
F	<i>Cirsium undulatum</i>	3	3	-	6	1	1	-	3	-	.01
F	<i>Comandra pallida</i>	27	35	31	16	13	14	13	7	1.50	.80
F	<i>Crepis acuminata</i>	2	5	8	5	1	2	5	3	.05	.09
F	Cruciferae	8	-	-	-	5	-	-	-	-	-
F	<i>Cryptantha</i> spp.	12	3	1	3	6	2	1	1	.00	.03
F	<i>Dalea searlsiae</i>	2	2	-	-	1	1	-	-	-	-
F	<i>Draba</i> spp. (a)	-	8	-	-	-	3	-	-	-	-
F	<i>Eriogonum alatum</i>	3	1	2	-	1	1	1	-	.03	-
F	<i>Erigeron flagellaris</i>	-	-	-	-	-	-	-	-	-	.00
F	<i>Erigeron</i> spp.	a-	b8	b10	a7	-	5	5	2	.57	.01
F	<i>Eriogonum racemosum</i>	b196	b191	a56	a78	72	71	26	35	.30	.62
F	<i>Eriogonum umbellatum</i>	a-	ab4	b12	b12	-	2	5	6	.05	.30
F	<i>Gayophytum ramosissimum</i> (a)	-	-	8	-	-	-	5	-	.40	-
F	<i>Hymenoxys acaulis</i>	2	2	1	3	1	1	1	1	.03	.03
F	<i>Hymenoxys richardsonii</i>	9	10	3	4	6	4	1	2	.03	.16
F	<i>Lappula occidentalis</i> (a)	-	-	3	5	-	-	1	2	.00	.03
F	<i>Linum lewisii</i>	16	19	15	7	10	9	6	3	.05	.01
F	<i>Lithospermum ruderale</i>	5	8	3	26	3	5	2	10	.18	.87
F	<i>Lotus utahensis</i>	3	3	-	-	2	1	-	-	-	.03

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'87	'91	'94	'98	'87	'91	'94	'98	'94	'98
F	<i>Lygodesmia spinosa</i>	2	3	5	6	1	1	2	3	.30	.09
F	<i>Oenothera caespitosa</i>	-	1	-	-	-	1	-	-	-	-
F	<i>Oenothera pallida</i>	-	-	-	-	5	-	-	2	-	.06
F	<i>Orthocarpus purpureo-albus</i> (a)	-	-	4	-	-	-	2	-	.03	-
F	<i>Penstemon comarrhenus</i>	b25	b18	b29	a1	13	11	14	1	.32	.03
F	<i>Phlox longifolia</i>	b59	a23	ab33	ab42	26	13	16	25	.15	.22
F	<i>Stellaria jamesiana</i>	-	-	-	-	1	-	-	1	-	.00
F	<i>Tragopogon dubius</i>	b14	a1	a-	a3	8	1	-	1	-	.06
F	Unknown forb-perennial	12	-	6	-	6	-	3	-	.06	-
F	<i>Viguiera multiflora</i>	-	4	-	-	-	2	-	-	-	-
Total Annual Forbs		0	8	15	5	0	3	8	2	0.43	0.03
Total Perennial Forbs		632	554	376	392	262	237	166	172	7.85	7.91

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 25C, Study no: 13

T y p e	Species	Strip Frequency		Average Cover %	
		'94	'98	'94	'98
B	<i>Amelanchier utahensis</i>	24	29	7.48	6.51
B	<i>Artemisia nova</i>	2	3	.04	.15
B	<i>Artemisia tridentata wyomingensis</i>	-	-	.03	-
B	<i>Ceanothus martinii</i>	0	0	-	-
B	<i>Chrysothamnus depressus</i>	8	3	.19	.15
B	<i>Chrysothamnus viscidiflorus viscidiflorus</i>	0	1	-	.00
B	<i>Echinocereus</i> spp.	-	-	.00	-
B	<i>Eriogonum microthecum</i>	3	6	-	.03
B	<i>Gutierrezia sarothrae</i>	11	8	.03	.04
B	<i>Mahonia repens</i>	2	2	.06	.06
B	<i>Opuntia</i> spp.	4	6	.03	.06
B	<i>Pinus edulis</i>	0	1	-	.85
B	<i>Pinus ponderosa</i>	0	0	-	-
B	<i>Purshia tridentata</i>	17	21	2.30	3.29
B	<i>Quercus gambelii</i>	36	51	20.68	18.57
B	<i>Symphoricarpos oreophilus</i>	3	3	.38	.33
B	<i>Tetradymia canescens</i>	0	2	-	.03
Total for Browse		110	136	31.25	30.12

BASIC COVER --

Herd unit 25C, Study no: 13

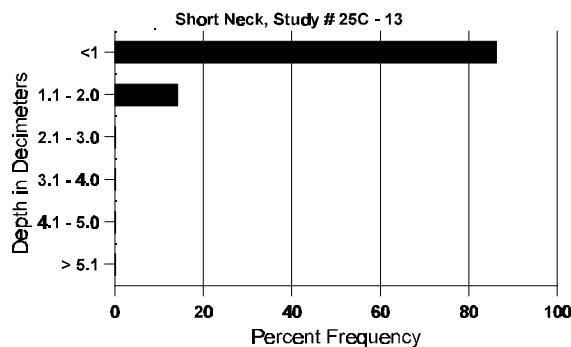
Cover Type	Nested Frequency		Average Cover %			
	'94	'98	'87	'91	'94	'98
Vegetation	308	338	4.75	8.25	43.62	55.77
Rock	303	269	40.50	45.75	35.59	27.93
Pavement	92	62	8.25	6.50	1.00	2.05
Litter	377	381	42.25	35.25	47.81	54.97
Cryptogams	5	10	0	.25	.03	.08
Bare Ground	144	45	4.25	4.00	5.95	1.04

SOIL ANALYSIS DATA --

Herd Unit 25C, Study # 13, Study Name: Short Neck

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
9.5	62.8 (11.5)	5.7	54.0	28.2	17.8	4.5	18.4	137.6	.4

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 25C, Study no: 13

Type	Quadrat Frequency	
	'94	'98
Rabbit	12	1
Elk	13	16
Deer	6	3

BROWSE CHARACTERISTICS --

Herd unit 25C, Study no: 13

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Amelanchier utahensis																	
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	1	-	-	-	-	-	1	-	-	2	-	-	-	40		2
Y	87	6	3	11	-	-	-	-	-	-	20	-	-	-	1333		20
	91	1	-	-	-	1	-	-	-	-	2	-	-	-	133		2
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	98	-	3	-	10	-	-	-	-	-	13	-	-	-	260		13
M	87	-	2	10	-	-	-	-	-	-	12	-	-	-	800	36 17	12
	91	-	-	-	-	24	-	-	-	-	24	-	-	-	1600	34 27	24
	94	46	9	-	-	-	-	-	-	-	53	-	2	-	1100	42 40	55
	98	28	22	-	5	-	-	-	-	-	54	1	-	-	1100	42 39	55
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	1	-	-	-	-	-	-	-	1	-	-	-	20		1
	98	3	1	-	-	-	-	-	-	-	3	-	-	1	80		4
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'87	16%			66%			00%				-19%					
	'91	96%			00%			00%				-34%					
	'94	18%			00%			04%				+21%					
	'98	36%			00%			01%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	2133	Dec:	0%		
												'91	1733		0%		
												'94	1140		2%		
												'98	1440		6%		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4	5	6	7	8	9	1	2	3	4									
Artemisia nova																							
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2						
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	94	3	-	-	-	-	-	-	-	-	3	-	-	-	60	9 22	3						
	98	4	2	-	-	-	-	-	-	-	6	-	-	-	120	13 21	6						
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
		'87	00%			00%			00%														
		'91	00%			00%			00%														
		'94	00%			00%			00%				+63%										
		'98	25%			00%			00%														
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-								
												'91	0	-									
												'94	60	-									
												'98	160	-									
Ceanothus martinii																							
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66	14 31	1						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
		'87	00%			00%			00%														
		'91	00%			00%			00%														
		'94	00%			00%			00%														
		'98	00%			00%			00%														
Total Plants/Acre (excluding Dead & Seedlings)												'87	66	Dec:	-								
												'91	0	-									
												'94	0	-									
												'98	0	-									

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4	5	6	7	8	9	1	2	3	4									
Chrysothamnus depressus																							
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	1	-	1	-	-	-	-	-	-	2	-	-	-	40		2						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	94	5	8	-	-	-	-	-	-	-	13	-	-	-	260	14	12						
	98	4	-	-	4	-	-	-	-	-	8	-	-	-	160	8	15						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
'87		00%			00%			00%															
'91		00%			00%			00%															
'94		53%			07%			00%				-47%											
'98		00%			00%			00%															
Total Plants/Acre (excluding Dead & Seedlings)										'87	0	Dec:	-										
										'91	0		-										
										'94	300		-										
										'98	160		-										
Chrysothamnus viscidiflorus viscidiflorus																							
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8	6						
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
'87		00%			00%			00%															
'91		00%			00%			00%															
'94		00%			00%			00%															
'98		00%			00%			00%															
Total Plants/Acre (excluding Dead & Seedlings)										'87	0	Dec:	0%										
										'91	0		0%										
										'94	0		0%										
										'98	20		100%										

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Eriogonum microthecum																	
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	91	-	-	-	-	-	-	-	1	-	-	1	-	-	66	9	10
	94	-	7	-	-	-	-	-	-	-	7	-	-	-	140	9	11
	98	11	2	-	-	-	-	-	-	-	13	-	-	-	260	7	11
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	2	-	-	-	-	-	2	133		2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
	'87	00%			00%			00%									
	'91	00%			00%			67%			-30%						
	'94	100%			00%			00%			+50%						
	'98	14%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	0%		
												'91	199		67%		
												'94	140		0%		
												'98	280		0%		
Gutierrezia sarothrae																	
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
	98	-	-	-	5	-	-	-	-	-	5	-	-	-	100		5
D	87	4	-	-	-	-	-	-	-	-	4	-	-	-	266	11	7
	91	2	1	-	-	-	-	-	-	-	3	-	-	-	200	6	4
	94	10	-	-	-	-	-	-	-	-	10	-	-	-	200	7	7
	98	10	-	-	-	-	-	-	-	-	10	-	-	-	200	6	7
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
	'87	00%			00%			00%			-40%						
	'91	33%			00%			00%			+ 9%						
	'94	00%			00%			00%			+27%						
	'98	00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	332	Dec:	-		
												'91	200		-		
												'94	220		-		
												'98	300		-		

A G E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Mahonia repens																	
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	94	15	-	-	-	-	-	-	-	-	15	-	-	-	300	3 2	15
	98	15	-	-	-	-	-	-	-	-	15	-	-	-	300	2 3	15
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
		'87	00%		00%		00%										
		'91	00%		00%		00%										
		'94	00%		00%		00%									+ 0%	
		'98	00%		00%		00%										
Total Plants/Acre (excluding Dead & Seedlings)																	
												'87	0	Dec:	-		
												'91	0		-		
												'94	300		-		
												'98	300		-		
Opuntia spp.																	
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	94	6	-	-	-	-	-	-	-	-	6	-	-	-	120	2 5	6
	98	22	-	-	-	-	-	-	-	-	22	-	-	-	440	3 6	22
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
		'87	00%		00%		00%										
		'91	00%		00%		00%										
		'94	00%		00%		00%									+73%	
		'98	00%		00%		00%										
Total Plants/Acre (excluding Dead & Seedlings)																	
												'87	0	Dec:	-		
												'91	0		-		
												'94	120		-		
												'98	440		-		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4	5	6	7	8	9	1	2	3	4									
Pinus edulis																							
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	1	-	-	1	-	-	-	66		1						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1						
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
'87		00%			00%			00%															
'91		00%			00%			00%															
'94		00%			00%			00%															
'98		00%			00%			00%															
Total Plants/Acre (excluding Dead & Seedlings)										'87	0	Dec:											
										'91	0												
										'94	0												
										'98	20												
Pinus ponderosa																							
M	87	-	-	-	-	-	-	-	1	-	1	-	-	-	66	393	236						
	91	-	-	-	-	-	-	-	1	-	1	-	-	-	66	-	-						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>											
'87		00%			00%			00%				+ 0%											
'91		00%			00%			00%															
'94		00%			00%			00%															
'98		00%			00%			00%															
Total Plants/Acre (excluding Dead & Seedlings)										'87	66	Dec:											
										'91	66												
										'94	0												
										'98	0												

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Purshia tridentata																	
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3
	91	-	3	1	2	1	-	-	-	-	7	-	-	-	466		7
	94	2	1	-	-	-	-	-	-	-	3	-	-	-	60		3
	98	4	1	-	1	-	-	-	-	-	6	-	-	-	120		6
M	87	1	3	-	-	-	-	-	-	-	4	-	-	-	266	16 22	4
	91	-	1	2	-	1	-	1	-	-	5	-	-	-	333	15 35	5
	94	8	17	-	1	-	-	-	-	-	24	-	-	2	520	29 63	26
	98	14	5	-	2	3	-	-	-	-	24	-	-	-	480	18 39	24
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	2	-	-	-	-	-	-	2	-	-	-	133		2
	94	-	2	-	-	-	-	-	-	-	2	-	-	-	40		2
	98	2	-	-	1	-	-	-	-	-	3	-	-	-	60		3
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'87	43%			00%			00%				+50%					
	'91	43%			36%			00%				-33%					
	'94	65%			00%			06%				+ 6%					
	'98	27%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	466	Dec:	0%		
												'91	932		14%		
												'94	620		6%		
												'98	660		9%		

A G E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Quercus gambelii																	
S	87	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9
	91	6	-	-	3	-	-	17	-	-	26	-	-	-	1733		26
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	98	6	-	-	20	-	-	18	-	-	44	-	-	-	880		44
Y	87	12	-	-	-	-	-	-	-	-	8	4	-	-	800		12
	91	14	17	-	12	8	-	11	-	-	59	-	3	-	4133		62
	94	19	1	-	-	-	-	-	-	-	20	-	-	-	400		20
	98	15	-	-	81	-	-	32	-	-	128	-	-	-	2560		128
M	87	46	-	-	-	-	-	-	-	-	33	-	13	-	3066	45 28	46
	91	-	6	1	-	3	-	-	-	-	9	-	1	-	666	48 22	10
	94	22	150	-	-	-	-	-	-	-	172	-	-	-	3440	40 32	172
	98	94	27	-	78	-	-	5	-	-	204	-	-	-	4080	45 27	204
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	1	14	1	-	3	-	3	-	-	10	2	6	4	1466		22
	94	-	8	-	-	-	-	-	-	-	8	-	-	-	160		8
	98	26	-	-	-	-	-	-	-	-	23	-	-	3	520		26
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	380		19
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'87	00%			00%			22%				+38%					
	'91	54%			02%			15%				-36%					
	'94	80%			00%			00%				+44%					
	'98	08%			00%			.83%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	3866	Dec:	0%		
												'91	6265		23%		
												'94	4000		4%		
												'98	7160		7%		
Symphoricarpos oreophilus																	
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	91	-	-	-	-	-	1	-	-	-	1	-	-	-	66		1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0
	94	5	-	-	-	-	-	-	-	-	4	-	1	-	100	10 25	5
	98	-	2	-	-	-	-	3	-	-	5	-	-	-	100	13 33	5
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>%Change</u>					
	'87	00%			00%			00%									
	'91	00%			100%			00%				+45%					
	'94	00%			00%			17%				-17%					
	'98	40%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)												'87	0	Dec:	-		
												'91	66		-		
												'94	120		-		
												'98	100		-		

A G R E	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total						
		1	2	3	4	5	6	7	8	9	1	2	3	4									
Tetradymia canescens																							
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0						
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1						
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-						
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	8	14						
	98	1	1	-	-	-	-	-	-	-	2	-	-	-	40	10	18						
% Plants Showing			<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>				<u>% Change</u>										
'87			00%			00%			00%														
'91			00%			00%			00%														
'94			00%			00%			00%														
'98			33%			00%			00%														
Total Plants/Acre (excluding Dead & Seedlings)										'87	0	Dec:	-										
										'91	0		-										
										'94	0		-										
										'98	60		-										